



Mediterranean species of the *Medetera plumbella* species group with description of a new peculiar species from Morocco (Diptera: Dolichopodidae)

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Abstract

The *Medetera plumbella* species group in the Mediterranean Region is reviewed. It comprises seven species and one subspecies including a new species *Medetera varvara* Grichanov & Vikhrev **sp. nov.** from Morocco. The species is peculiar in its fore leg decoration and sand dune habitat. A check list and revised key to species of this species group are provided.

Key words: Dolichopodidae, Medeterinae, *Medetera*, Palearctic, Mediterranean Region, new species, key

Introduction

The genus *Medetera* Fischer von Waldheim, 1819, numbers now about 330 mostly Holarctic species, but we think hundreds of undescribed species populate tropical and subtropical belts of the World. *Medetera plumbella* species group was originally recognized as the genus *Oligochaetus* by Mik (1878) with the type species *Medeterus plumbellus* Meigen. Bigot (1890) later considered *Oligochaetus* a synonym of *Medetera*. Subsequent Old World workers treated the name as a subgenus of *Medetera* (e.g., Becker 1917) or an independent genus (e.g., Stackelberg 1937; Parent 1938), including in the latter genus the *plumbella*, *senicula*, *micacea* and *annulitarsa* species groups. Negrobov (1966) did not find any significant generic characters to distinguish *Oligochaetus* from *Medetera*, but he nevertheless coined the subgenera *Asioligochaetus* Negrobov, 1966, and *Lorea* Negrobov, 1966, for some of the Central Asian *Oligochaetus* species. Negrobov & Stackelberg (1972) published a key that incorporated all Palearctic species of *Medetera*. Bickel (1985, 1987) considered all the subgenera as no more than species groups of *Medetera*, and he placed the subgenera *Asioligochaetus* and *Lorea* in synonymy with *Medetera*. Members of the former *Oligochaetus* are also present in the Afrotropical Region (Grichanov 1997a, 1999). They have some relations to North American *petulca* group of species (Bickel 1985). Only one species of the *plumbella* group s.s. (*M. plumbella*) inhabits Europe, ranging from southern regions to the Scandinavian countries. Several species of this group were described from desert and semidesert areas of the Old World including North Africa, with some species collected from rodent holes (Stackelberg 1937; Grichanov *et al.* 2007).

Material and methods

Specimens examined in this study are deposited in the Zoological Museum of Moscow State University, Moscow (ZMU).

Morphological terminology follows Robinson and Vockeroth (1981), Stuckenberg (1999) and Sinclair (2000). Body length is measured from the base of the antenna to the tip of abdominal segment 7. Wing length is measured from the base to the wing apex. The relative lengths of the tarsomeres should be regarded as representative ratios and not measurements. Male genitalia were macerated in 10% KOH. Figure showing the male genitalia in lateral view are oriented as they appear on the intact specimen (rotated 180° and lateroflexed to the right), with the morphologically ventral surface of the genitalia facing up, dorsal surface down, anterior end facing right and posterior end facing left. Distribution of species follows those of Negrobov (1991), Grichanov (2007) and Grichanov *et al.* (2007).

Systematics

Key to Palearctic *Medetera* species groups formerly regarded as genus *Oligochaetus*

- 1 Postoculars irregular, not uniseriate; wing milky, with brownish spots; mid tibia with 3 apical setae, one of them nearly as long as mid basitarsus *vlasovi* species group
- Postoculars regularly uniseriate; wing hyaline, without spots; mid tibia with short apical setae..... 2
- 2 Distal part of CuA₁ 5–6 times longer than cross-vein m-cu; basal part of CuA₁ somewhat thickened along nearly whole length; male cercus short, at most half as long as surstylus, without cilia..... *spinigera* species group
- Distal part of CuA₁ at most 3–4 times longer than cross-vein m-cu; basal part of CuA₁ not thickened; male cercus longer, covered with cilia 3
- 3 Face and clypeus distinctly heterochromous, with the face brown or greyish pollinose and clypeus more or less shining 4
- Face and clypeus entirely dusted, monochrome 5
- 4 Femora mostly black; postocular and proepisternal bristles whitish..... *micacea* species group
- Femora mostly yellow; proepisternal bristles black, postoculars partly black..... *annulitarsa* species group
- 5 Legs mainly yellow; male cercus without strong spiniform apical seta..... *plumbella* species group
- Legs mainly black; male cercus with a strong spiniform apical seta..... *senicula* species group

Medetera plumbella species group

Diagnosis. Small species, about 2 mm; face and clypeus entirely dusted, monochrome, usually light-coloured; postoculars uniseriate; lateral scutellars reduced, hair-like, less than 1/3 length of median setae, or totally lost; 3 strong dorsocentrals; acrostichals small or microscopic; apical section of CuA₁ at most 2 times longer than m-cu; legs mainly yellow, with fore coxa and femora entirely yellow; rarely fore coxa black or femora black at base; 1 or 2 small dorsal bristles at basal 1/3 of mid tibia; mid tarsi with long apicals on all segments. Members of related Palearctic *micacea* and *annulitarsa* species groups differ in distinctly heterochromous face and clypeus, with the face brown or greyish pollinose and clypeus more or less shining; Palearctic species of *senicula* and *micacea* groups differ from the *plumbella* group in mostly black femora.

List of known Mediterranean species of *Medetera plumbella* group

- albescens* (Parent), 1925: 154 (*Oligochaetus*) (Parent 1929). Type locality: Egypt: Mariout. Distribution: Egypt.
- albescens lutescens* (Parent), 1925: 158 (*Oligochaetus*, as var. of *O. albescens*) (Parent 1929), Negrobov 1991 (as a subsp. of *M. albescens*) (Yang *et al.* 2006 listed as a synonym of *M. albescens*). Type locality: Egypt: Ramleh. Distribution: Egypt.
- albisetosa* (Parent), 1925: 15 (*Oligochaetus*) (Parent 1929). Type locality: Egypt: Route de Suez. Distribution: Egypt.

araneipes Parent, 1929: 43. Type locality: Egypt: Emeib. Distribution: Egypt; Sudan.

pallidior (Stackelberg), 1937: 129 (in key; as *albosetosus pallidior*) (Negrobov 1966). Type locality: not given [Turkmenistan: Ashkhabad]. Distribution: Armenia; W & S Kazakhstan: Aqtau, Shimkent, Taraz; S Tajikistan; Turkmenistan; Uzbekistan: Karakalpakstan, Khiva.

plumbella Meigen, 1824: 69. Type locality: Germany: Berlin. Distribution: Armenia, Austria, Belgium, China, Czech, Denmark, Estonia, Finland, France, Germany, Hungary, Israel, Italy, Kazakhstan, Netherlands, Norway, Poland, Russia: Irkutsk Region, Slovakia, Sweden, Ukraine: Crimea; ?Ethiopia.

minuta von Roser, 1840: 56 (*Medeterus*) (nec Fabricius, 1805) (Denninger 1950).

minuta (Zetterstedt), 1843: 456 (*Hydrophorus*) (misident., nec Fabricius, 1805) (Loew 1857).

minutula Negrobov, 1991: 131 (in error for *minuta* von Roser, 1840).

sylvestris (Becker), 1908: 56 (*Oligochaetus*) (Negrobov 1966). Type locality: Spain: Canary Is., Icod de los Vinos, "Pinar". Distribution: Spain (Canary Is.).

varvara Grichanov & Vikhrev **sp. nov.** Type locality: Morocco, near Essaouira. Distribution: Morocco.

Key to Mediterranean species of the *Medetera plumbella* species group

- 1 Fore coxa greyish black; femora black at base and tibiae black at apex; tarsi entirely brown-black; m-cu longer than apical section of CuA₁; body length: 2.0 *M. sylvestris* (Becker)
- Fore coxa yellow; femora entirely yellow; tibiae and basitarsi black at most at extreme apex; m-cu equal to or shorter than apical section of CuA₁ 2
- 2 Mesonotum with yellow or brownish setae; scape and pedicel yellow; hind femur without long anteroventrals 3
- Mesonotum with black setae; scape and pedicel either yellow or black 5
- 3 Fore and mid coxae with simple or inconspicuously flattened setae; body length: 1.7–2.1 *M. pallidior* (Stackelberg)
- Fore and mid coxae with flattened scale-like anterior cilia forming true brush; body length: 2.25 4
- 4 Fore tibia shorter than 1st and 2nd tarsomeres combined; greatest distance between M₁₊₂ and R₄₊₅ 3.5 times as long as that at their tips *M. albisetosa* (Parent)
- Fore tibia longer than 1st and 2nd tarsomeres combined; greatest distance between M₁₊₂ and R₄₊₅ 2.5 times as long as that at their tips *M. albescens lutescens* (Parent)
- 5 Antenna entirely black; fore and mid coxae with simple pilosity; body length: 1.6–2.5 *M. plumbella* Meigen
- Scape and pedicel yellow or reddish; fore and mid coxae with either simple or modified cilia 6
- 6 Fore and mid coxae with simple sparse hairs; acrostichal setae well developed; body length: 1.75 *M. araneipes* Parent
- Fore and mid coxae with flattened anterior cilia forming true brush; acrostichals short 7
- 7 Frons and face greyish-white pollinose; hind coxa with one seta; male with fore tarsus from apex of basitarsus to 4th segment slightly swollen, densely covered with white thickened cilia on anterior surface; body length: 2.0–2.2 *M. varvara* Grichanov et Vikhrev **sp. nov.**
- Frons and face silvery-white; hind coxa with three outer setae; legs unmodified; body length: 2.25 *M. albescens albescens* (Parent)

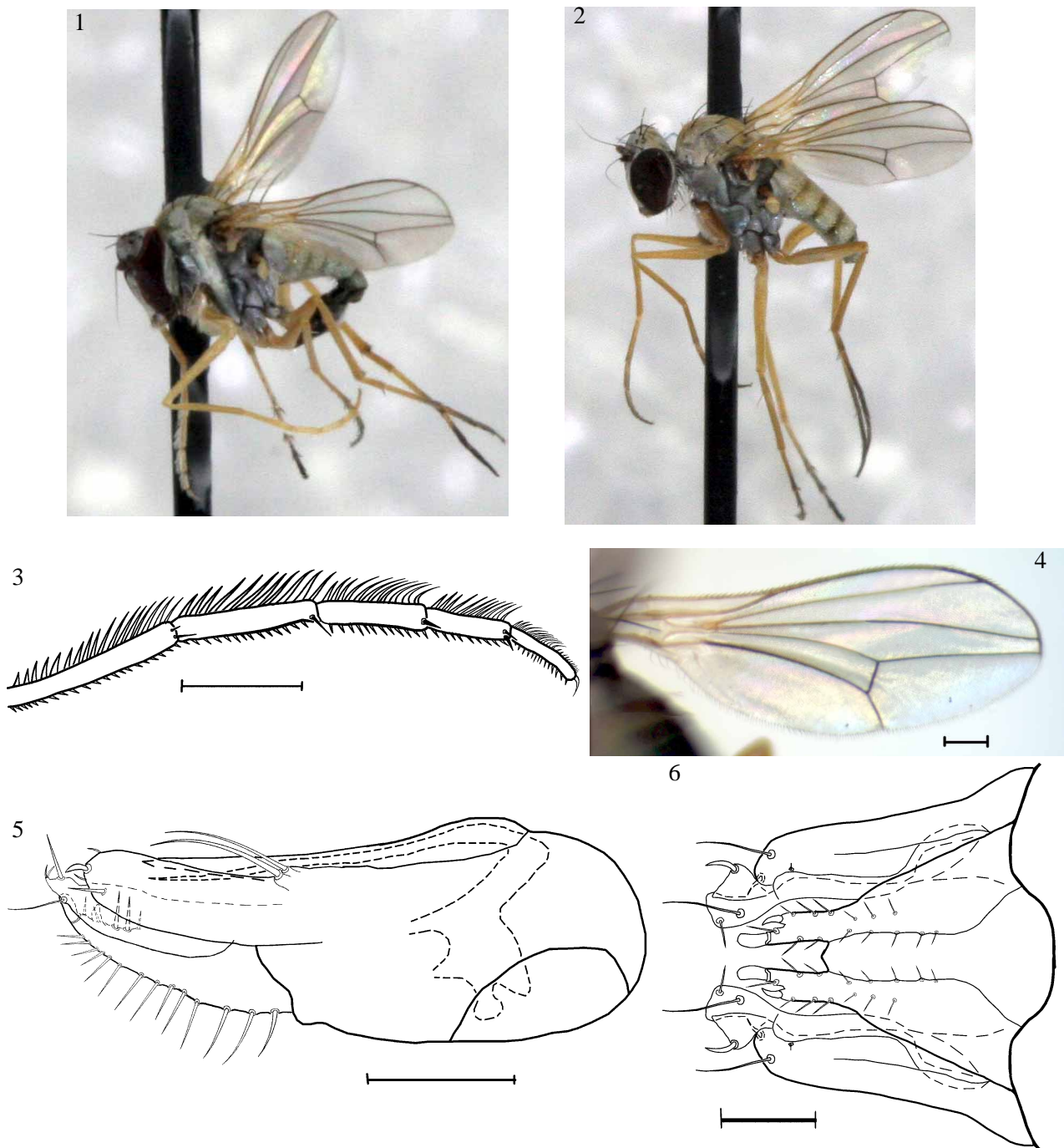
Medetera varvara Grichanov & Vikhrev **sp. nov.**

(Figs. 1–6)

Type material. Holotype ♂: **Morocco**, near Essaouira, 31.563°N 9.714°W, sand dune, 29 March 2009, N. Vikhrev (ZMU). Paratypes. 2 ♀♀ with same data as holotype, 28 and 29 March (ZMU).

Diagnosis. *Medetera varvara* is related to Egyptian *M. albescens* (Parent) which differs from the former by silvery-white frons and face, hind coxa bearing three outer setae and fore tarsus unmodified. Ornamentation of fore legs is unknown for other species of Palearctic *Medetera* including *M. albescens* which was published with a rather detailed description. In the Afrotropics, only *M. luteoscutata* Parent, 1936, has a small apicoventral process on tarsomere 1 and 3 of fore leg. Mainly Pantropical *Saccophieronta* Becker, 1914,

a sister genus (Grichanov 1997b) or “*aberrans*” group of *Medetera* species (Bickel 1985, 1987) includes species with thickened or widened tarsomeres 2 and 3 of male fore leg. The absolute majority of medeterine species of the world fauna have no remarkable fore leg decoration.



FIGURES 1–6. *Medetera varvara* Grichanov et Vikhrev **sp. nov.** **1.** male holotype, habitus. **2.** female paratype, habitus. **3.** male fore tarsus. **4.** wing. **5.** hypopygium, left lateral aspect. **6.** apex of hypopygium, dorsal aspect. Scale bars: 0.2 mm.

Description. Male (Fig. 1): Length (mm): body 2.0, wing 2.0/0.7, antenna 0.7, hypopygium 0.8.

Head: Frons, face, clypeus, palpus and postcranium greenish, evenly and densely dusted greyish-white, so frontoclypeal suture between face and clypeus not distinct. Postocular setae white, somewhat thickened, strongly increasing in length downward. Ventral postcranium shining greenish, with row of long white thickened setae. Frons with pair of strong vertical setae and pair of ocellar setae slightly stronger than verticals. Postverticals absent. Face relatively wide; ratio of height of face to its maximal width to height of

clypeus to height of palpus, 15/8/5/5. Antennal segments short, with short white hairs; scape and pedicel orange-brownish, grey dusted at apex; postpedicel black, rounded. Stylus subapical, bare, about 2 times as long as ocellar seta. Proboscis short, black, shining, with white hairs.

Thorax: Dark, densely grey dusted; mesonotum with 3 narrow bronze stripes distinct in anterior view. Three pairs of strong black dorsocentral setae, slightly decreasing in size anteriorly. Notopleural setae 2, sutural 1, supraalar 1, all black; 1 white humeral seta. Acrostichals very short, biseriate, white, extending to mesonotal flattening. Several white setulae in front of first dorsocentral and sutural setae. Propleuron with 5 white thickened setae, lower one almost 2 times longer than others. Scutellum with pair of strong black median setae, lateral setae absent.

Legs: Yellow, except fore legs whitish-yellow, hind tibia darkened at apex, tarsomeres 4 and 5 and apical part of 2 and 3 of mid and hind legs brownish; mid and hind coxae mostly dark, grey dusted, yellow at apex. Fore coxa with dense brush of long white flattened setae on anterior surface. Fore femur and tibia without setae. Fore tarsomeres 1 to 5 each with pair of small brown apical postero- and anteroventral setulae; tarsomeres 2 to 5 each with pair of very small brown ventral setulae; tarsomeres 2 to 4 slightly flattened laterally; apical 1/3 of tarsomere 1 and tarsomeres 2 to 4 with comb of white thickened cilia on dorsal surface (Fig. 3). Mid coxa with dense brush of long thickened white setae on anterior surface; mid trochanter with single white seta on anterior position; mid femur without setae. Mid tibia with pair of antero- and posterodorsals at 1/4 and long apicoventral seta, all white. Mid tarsus with four brown apical setae on each segment; basitarsus in apical half with 4–5 short brown setulae, somewhat irregularly placed, but in either antero- or posteroventral positions, tarsomere 2 with 3 such setulae, 3rd with 2–3, 4th and 5th with 2 ones each; all these setulae gradually decreasing in size apically. Hind coxa with single white seta on outer surface; hind femur with row of white dorsal setulae in basal half; hind tibia slightly thickened at apex, with posterodorsal setula at 1/4 and ventral apical one, both white; with very short black posterodorsal apical spur; hind tibia on apical 2/3, basitarsus and tarsomere 2 on basal 2/3 with row of short dense white posteroventral cilia; hind basitarsus short, with 2 apicals: brown anteroventral and white ventral, with small white posteroventral basal tooth and shallow basal excavation; tarsomeres 2 to 5 each with 1–3 brown anteroventral and 2–3 brown apical setulae, these setulae gradually decreasing in size apically. Fore leg length ratio (from coxa to tarsomere 5): 24/40/35/20/10/8/5/5, mid leg: 16/42/45/22/10/8/6/5, hind leg: 14/45/51/12/24/14/8/6.

Wings: Hyaline, veins yellow in anterobasal quarter of wing, brown in other parts (Fig. 4). Costa without long hairs. R_1 short, extending to basal third of wing, R_{4+5} and M_{1+2} distinctly convergent at apex. Ratio of part of costa between R_{2+3} and R_{4+5} to this between R_{4+5} and M_{1+2} , 25/5. Ratio of apical to basal part of M_{1+2} , 17/18. Ratio of cross-vein *m-cu* to maximal distance between R_{4+5} and M_{1+2} to distal part of CuA_1 , 10/11/12. Calypter yellow, with white cilia. Halter yellow.

Abdomen: Covered with short white setulae, olive-grey dusted, with fore margin of tergites 3 to 5 bronze dorsally; posterior margin of tergite 1 with 5–6 white flattened setae on each side. Tergite 6 slightly longer than tergite 5; segment 7 longer than preceding, with short hairs; segment 8 large, left basolateral, short-haired. Epandrium (Fig. 5) black, elongate-triangular; hypandrium basoventral, slightly swollen at base, then thinned, pointed at apex; phallus simple, pointed; epandrial lobe small, hardly divided, bearing pair of long simple setae; surstylus and cercus (Fig. 6) dark-brown; cercus fused almost to apex, covered with short white hairs.

Female (Fig. 2): Length (mm): body 2.2, wing 2.2; similar to male except lacking male secondary sexual characters. Each hemitergite bearing 1 acanthophorite and 1 simple seta; acanthophorites thin, much longer than cercus; cercus small, with short hairs. Dense brush of thickened white setae on anterior surface of fore and hind coxae, but setae about two times shorter and more equal in length than those of male. Fore tarsi unmodified; tarsomeres 4 and 5 and apical part of 2 and 3 of fore legs brownish, as on mid and hind tarsi. Hind tibia without apical spur; hind basitarsus simple, without basal tooth.

Distribution: Morocco.

Etymology. The species is named for Varvara Vikhreva who kindly helped to collect flies in Morocco.

Habitat: All three specimens of the type series were collected from sandy substrates. This habitat is rather unusual for mainly dendrophilous, sometimes petrophilous species of *Medetera*, although many species of the Nearctic *M. petulca* group occur in such habitats (Bickel pers. comm. 2009). Trees on sand dunes were also examined, but all specimens of tree trunk *Medetera* (*M. flavipes* Meigen, 1824, and *M. pallipes* (Zetterstedt, 1843)) collected on the Essaouira dunes (between 24 and 29 March) belong to other species groups of the genus. The senior author observed *M. pallidior* imagos in Southern Tajikistan (the Tigrovaya Balka Nature Reserve) in July 1978, where they populated rodent holes (to 5 cm in diameter) on a rather dry and flat semidesert plot not far from the border with a large area of riparian marshes. Males and females of the species concentrated around holes, and frightened or disturbed flies dropped immediately into the holes.

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